

Appl. No. 10/714,207  
Reply to Office Action of October 5, 2006

Attorney Docket No. 2003-0442 / 24061.519  
Customer No. 42717

### **REMARKS**

Claims 1-2 and 5-10 are present in the application. In view of the remarks that follow, Applicants respectfully request reconsideration.

#### **Independent Claim 1 - 35 U.S.C. §102**

Independent Claim 1 stands rejected under 35 U.S.C. §102 as anticipated by Yeh U.S. Patent No. 6,207,565. This ground of rejection is respectfully traversed, for the following reasons.

#### **ALL ELEMENTS OF CLAIM MUST BE PRESENT IN ONE EMBODIMENT**

If a reference discloses multiple embodiments, then in order to anticipate a claim under §102, the elements in the claim must all be present in one of the disclosed embodiments. In more detail, MPEP §2131 specifies that, under §102, each and every element of a claim must be found in a single prior art reference, and also specifies that "The elements must be arranged as required by the claim". This PTO requirement reflects decisions by the PTO Board of Appeals, and also the courts. For example, on this point of law, MPEP §2131 cites *In re Bond*, 910 F.2d 831, 15 USPQ2d 1566 (Fed. Cir. 1990), which in turn cites *Lindemann Maschinenfabrik GmbH v. American Hoist & Derrick Co.*, 221 USPQ 481, 485 (Fed.Cir. 1984), and *Lindemann* in turn cites *Connell v. Sears Roebuck & Co.*, 220 USPQ 193 (Fed.Cir. 1983). These three cases all reflect the fact that the Court of Appeals for the Federal Circuit has repeatedly held that:

Anticipation requires the presence in a single prior art reference disclosure of each and every element of the claimed invention, arranged as in the claim.

*Lindemann Maschinenfabrik GmbH v. American Hoist & Derrick Co.*, 221 USPQ 481, 485 (Fed.Cir. 1984), citing *Connell v. Sears Roebuck & Co.*, 220 USPQ 193 (Fed.Cir. 1983), emphasis added.

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In *Lindemann*, the Federal Circuit struck down a finding of anticipation under §102, emphasizing that the underlying analysis was erroneous to the extent it "treated the claims as mere catalogs of separate parts, in disregard of the part-to-part relationships set forth in the claims and that give the claims their meaning". *Lindemann* at 486.

Within the Patent Office, the Board of Appeals adheres to precisely the same requirement. For example, in an application filed by an inventor named Gould, an examiner rejected claims under §102 as anticipated by a "Partington" reference. Gould appealed, and the examiner lost. In particular, the PTO Board of Appeals reversed the examiner's rejection, holding that:

Gould has argued throughout the prosecution of this case that, while all the elements of his claimed device were known (and are shown in Partington), the elements were not arranged in the manner required by the claims. We agree.

*Ex parte Gould*, 6 USPQ2d 1680, 1682 (Bd.Pat.App. & Int'l. 1987), emphasis added.

In the present application, the §102 rejection based on the Yeh patent does not satisfy this legal requirement. Yeh discloses several different embodiments, and the Office Action selectively extracts isolated elements from at least three of these embodiments. In more detail, the "Background" section in column 1 of Yeh discusses a pre-existing embodiment that is not part of Yeh's invention, Figures 1-8 of Yeh disclose a first embodiment of Yeh's invention, and Figure 9 discloses a second embodiment of Yeh's invention. In the Office Action, the §102 rejection of Claim 1 is explained in lines 9-22 on page 2, and this explanation cites portions of Yeh that relate to all three of these embodiments, as follows:

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EMBODIMENTS IN YEH	CITATIONS IN REJECTION
Pre-Existing Embodiment Discussed in Background	Column 1, lines 35-53.
Embodiment of Figures 1-8	Figure 6; column 5, lines 50-67.
Embodiment of Figure 9	Figure 9; column 6, line 47 through column 7.

The Office Action does not take the position that any one of these three different embodiments contains all of the elements recited in Applicants' Claim 1. In other words, the Examiner has not established that one embodiment of Yeh, considered by itself, discloses "each and every element of the claimed invention, arranged as in the claim". The §102 rejection in the present application thus fails to meet the requirement (1) established by the Federal Circuit in *Bond, Lindermann, and Connell*, (2) applied by the PTO Board of Appeals in *Gould*, and (3) set forth by PTO management as a formal policy in MPEP §2131. Claim 1 of the present application is not anticipated by Yeh for precisely the same reason that the claims of *Gould* were not anticipated by the Partington reference. Combining multiple embodiments is not permitted under §102, because it always involves questions of obviousness under §103, regardless of whether the embodiments are in different references or are all in one reference.

Since the present Office Action presents a §102 rejection that combines at least three different embodiments, and since this approach is strictly prohibited by the courts, the PTO Board of Appeals, and also PTO management, the §102 rejection is defective and improper, and it is respectfully submitted that it must be withdrawn.

#### YEH DOES NOT DISCLOSE ALL ELEMENTS RECITED IN CLAIM 1

As mentioned above, the PTO specifies in MPEP §2131 that, in order for a reference to anticipate a claim under §102, the reference must teach each and every element recited in the claim, and those elements must all be arranged as recited in the claim. In the present situation,

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Yeh does not disclose all of the elements recited in Claim 1. In this regard, Claim 1 of the includes a recitation of:

- (a) performing an oxygen ashing step to remove said patterned photoresist layer;
  - (b) cleaning a residue from said opening by performing a halogen containing plasma step; and
  - (c) etching said cleaned opening in said substrate;
- wherein steps (a), (b), and (c) are performed in the same process chamber of said etching tool.

Of the various different embodiment disclosed in Yeh, the Examiner seems to rely primarily on the embodiment shown in Figure 9. In Figure 9, Yeh carries out an oxygen ashing step in block 904. Then, in blocks 906 and 908, Yeh carries out two different steps that each remove contaminants remaining from the oxygen ashing, and that can each apparently use a halogen-containing plasma. However, Figure 9 does not show any subsequent step that involves etching of any other structure. And since Figure 9 does not teach any process comparable to step (c) of Claim 1, Figure 9 also necessarily fails to disclose that a single process chamber can be used to carry out each of three steps comparable to steps (a), (b) and (b) in Applicant's Claim 1. Thus, Figure 9 of Yeh does not disclose each and every element recited in Claim 1. Moreover, it does not appear that any other embodiment of Yeh, considered by itself, discloses all of the elements recited in Claim 1. In other words, Yeh does not appear to disclose any embodiment that completely anticipates Claim 1 under §102. Claim 1 is therefore believed to be clearly allowable over Yeh, and notice to that effect is respectfully requested.

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**Independent Claim 1 - 35 U.S.C. §103**

Independent Claim 1 also stands rejected under 35 U.S.C. §103, on the ground that it would be obvious in view of a proposed combination of teachings from (1) Chen U.S. Patent No. 6,025,273, (2) Yeh U.S. Patent No. 6,207,565, and (3) a selected portion of the "Background" section of the present application. This ground of rejection is respectfully traversed. In this regard, the PTO specifies in MPEP §2142 that:

The examiner bears the initial burden of factually supporting any *prima facie* conclusion of obviousness. If the examiner does not produce a *prima facie* case, the applicant is under no obligation to submit evidence of nonobviousness.

Applicants respectfully submit that Chen, Yeh and the selected portion of Applicant's Background fail to establish a *prima facie* case of obviousness under §103 with respect to Claim 1, for mutually exclusive reasons that are discussed below.

**THE TEACHINGS FROM THE BACKGROUND ARE NOT ADMITTED PRIOR ART**

In the present application, the paragraph that bridges pages 1-2 is part of the "Background" section of the specification. In the Office Action, the Examiner asserts that selected teachings in this paragraph constitute "admitted" prior art. This assertion is respectfully traversed. Information presented in the "Background" section of a patent application is not "admitted" prior art unless an applicant uses the specific words "prior art" to expressly state that the information is prior art. For example, MPEP §2129 explains that:

**II. DISCUSSION OF PRIOR ART IN SPECIFICATION**

Where the specification identifies work done by another as "prior

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art," the subject matter so identified is treated as admitted prior art.

*In re Nomiya*, 509 F.2d 566, 571, 184 USPQ 607, 611 (CCPA  
1975).

In the present application, Applicants have not made any statement that the paragraph bridging pages 1-2 is "prior art". Therefore, and contrary to the assertions in the Office Action, the information in this paragraph does not meet the legal requirement that would allow it to be treated as "admitted" prior art.

Applicants' last Response pointed out that the indicated portion of the specification does not qualify as "admitted" prior art. On pages 7-8 of the present Office Action, the Examiner replies with an assertion that Applicants made an "unpersuasive" argument on this point. However, Applicants' prior explanation was not an argument that the Examiner could evaluate and treat as persuasive or unpersuasive. Instead, Applicants simply pointed out an obvious fact. In particular, the courts and PTO management have a well-established requirement that must be met in order for information in a specification to qualify as "admitted" prior art, and that requirement is very clearly not met here.

In the Office Action, the Examiner goes on to state that Applicants have not presented any objective evidence showing that the indicated paragraph is not "admitted" prior art. However, the Examiner has the law of admissions backwards. The law does not say that every statement is "admitted" prior art unless Applicants can prove it is not. To the contrary, the law says that a statement is not "admitted" prior art unless Applicants expressly admit that it is "prior art". And the official record contains no statement by Applicants that admits any portion of the paragraph bridging pages 1-2 is "prior art".

The Examiner then notes that the present application expressly admits Figure 3 is "prior art". Applicants agree. However, the §103 rejection is not based on Figure 3. The §103 rejection relies on the paragraph that bridges pages 1-2 of the specification, and this paragraph does not mention Figure 3.

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For the reasons set forth above, and contrary to the assertions in the Office Action, the indicated text at the bottom of page 1 of the specification does not constitute "admitted" prior art. As a result, the §103 rejection is based partly on information that has not been shown to qualify as "prior art" under U.S. law. The §103 rejection is therefore inherently defective, and must be withdrawn. And since the rejection is not based entirely on "prior art", it is respectfully submitted that the Examiner has failed to carry the burden of properly establishing a *prima facie* case of obviousness under §103. Accordingly, for this independent reason alone, it is respectfully submitted that Claim 1 is not obvious under §103, and notice to that effect is respectfully requested.

**THE PRIOR ART MUST TEACH ALL CLAIM LIMITATIONS UNDER §103**

The provisions of MPEP §2142 specify with respect to §103 that:

To establish a *prima facie* case of obviousness . . . the prior art reference (or references when combined) must teach or suggest all the claim limitations. (Emphasis added).

The PTO considers this requirement to be important, as evidenced by the fact that this exact language appears not only in MPEP §2142, but also in other sections of the MPEP, including MPEP §706.02(j) and MPEP §2143. As noted earlier, Applicants' Claim 1 includes a recitation of:

- (a) performing an oxygen ashing step to remove said patterned photoresist layer;
- (b) cleaning a residue from said opening by performing a halogen containing plasma step; and

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(c) etching said cleaned opening in said substrate;  
wherein steps (a), (b), and (c) are performed in the same  
process chamber of said etching tool.

The Office Action admits that Chen does not disclose use of a single chamber to successively carry out (a) an oxygen ashing step, (b) a halogen-based cleaning step and (c) an etching step that are comparable to the steps recited in Claim 1. The Office Action therefore turns to Yeh, and asserts that Yeh teaches use of a single chamber to successively carry out comparable ashing, cleaning and etching steps. Applicants respectfully disagree. Yeh has no teaching that oxygen ashing and halogen-based cleaning are followed by an etching step comparable to that recited in Claim 1. Yeh carries out oxygen ashing and halogen-based cleaning not in preparation for an etching step, but instead to thoroughly clean a surface in preparation for silicide formation. (See the abstract, block 808 in Figure 8 and block 910 in Figure 9). Yeh thus does not disclose what the Office Action says it does. Consequently, even if Chen and Yeh are considered together, neither contains anything suggesting the use of a single chamber to successively carry out ashing, cleaning and etching steps comparable to the steps recited in Claim 1.

The Office Action then goes on to assert that the paragraph bridging pages 1-2 of Applicants' specification teaches the use of a single chamber to successively carry out ashing and etching steps. However, there are two problems with this assertion.

First, as discussed above, Applicants have not admitted that the subject matter in the indicated paragraph is "prior art". Therefore, the §103 rejection is based in part on material that is not "prior art", and the rejection is thus inherently defective.

Second, and even assuming for the sake of discussion that the indicated paragraph actually was admitted prior art, it would still not cure the defect in Chen. In particular, as recognized in the Office Action, this paragraph mentions performing ashing and etching in the same process chamber, but it does not mention use of a single chamber to successively carry out oxygen ashing, halogen-based cleaning and etching steps that are comparable to the steps recited



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in Claim 1. Consequently, even if the indicated paragraph did happen to be prior art, combining Chen and Yeh with this information would still not "teach or suggest all the claim limitations" (emphasis added), and thus would not satisfy the PTO requirement set forth in MPEP §2142. Therefore, for this independent reason alone, it is respectfully submitted that amended Claim 1 is not obvious under §103, and notice to that effect is respectfully requested.

#### THERE IS NO REASONABLE EXPECTATION OF SUCCESS

In regard to establishing a prima facie case of obviousness under §103, MPEP §2142 specifies that "there must be a reasonable expectation of success. . . . and the reasonable expectation of success must . . . be found in the prior art, and not based on applicant's disclosure". The Examiner asserts that a person of ordinary skill in the art would be motivated to make the proposed combination "because of the desirability to reduce production and equipment cost and processing time, since only [one] . . . tool is needed". However, Applicants respectfully submit that this proposed motivation is highly theoretical, and has little practical relevance in the real world. More specifically, if it was practical to do so, the entire fabrication of every integrated circuit device would be carried out from start to finish in a single process chamber, namely "because of the desirability to reduce production and equipment cost and processing time, since only [one] . . . tool is needed". But as a practical matter, the fabrication of virtually all integrated circuits requires the use of multiple process chambers, and there are strict practical limits on how many successive steps can be carried out in a single process chamber.

Persons skilled in the art are very familiar with the fact that it is typically not at all simple or obvious to carry out a sequence of steps in a single process chamber. Consequently, for a given sequence of steps, a person skilled in the art would not normally have any reasonable expectation that those steps could be easily and successfully carried out in a single process chamber, despite the "desirability to reduce production and equipment cost and processing time". And to the extent that a person skilled in the art would not normally have a reasonable expectation of success for any given sequence of multiple steps, the Office Action fails to

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establish a reasonable expectation of success for the proposed combination of steps. The only reason the Examiner expects that the proposed combination of steps could be successfully carried out in a single process chamber is because of hindsight of the success that is discussed in Applicants' disclosure. But this is prohibited by MPEP §2142, which specifies that "the reasonable expectation of success must . . . be found in the prior art, and not based on applicant's disclosure".

At the bottom of page 8 of the Office Action, the Examiner asserts that "the combined references clearly establish a prima facie case of obviousness with [a] reasonable expectation of success". However, this is nothing more than a conclusory assertion that the prior art establishes a reasonable expectation of success, without any logical rationale as to why this would be the case. Thus, as a practical matter, the Office Action lacks any meaningful discussion at all of why the prior art would impart a reasonable expectation of success to a person of ordinary skill in the art. Consequently, the Office Action fails to satisfy one of the minimum PTO requirements needed to establish a prima facie case of obviousness. Accordingly, for this independent reason alone, it is respectfully submitted that Claim 1 is not obvious under §103, and notice to that effect is respectfully requested.

In view of the various different reasons discussed above, it is respectfully submitted that Claim 1 is not rendered obvious under §103 by Chen, Yeh and the indicated portion of Applicants' specification. Claim 1 is therefore believed to be allowable, and notice to that effect is respectfully requested.

#### Dependent Claims

Claims 2 and 5-10 depend from Claim 1, and are also believed to be distinct from the art of record, for example for the same reasons discussed above with respect to Claim 1.

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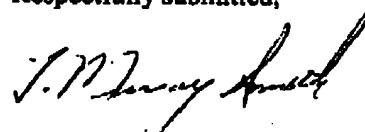
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Conclusion

Based on the foregoing, it is respectfully submitted that all of the pending claims are fully allowable, and favorable reconsideration of this application is therefore respectfully requested. If the Examiner believes that examination of the present application may be advanced in any way by a telephone conference, the Examiner is invited to telephone the undersigned attorney at 972-739-8647.

Although Applicants believe that no additional fees are due, the Commissioner is hereby authorized to charge any fee required by this paper, or to credit any overpayment, to Deposit Account No. 08-1394 of Haynes and Boone, LLP.

Respectfully submitted,



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Date: October 30, 2006

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Enclosures: None

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